

# Wei-Lin Chiang

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Webpage: [infwinston.github.io](https://infwinston.github.io)

## Education

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**Ph.D. in EECS, University of California, Berkeley**

*Aug. 2020 - present*

- Advisors: Prof. Ion Stoica

**M.S. in Computer Science Dept., National Taiwan University**

*Feb. 2018 - Jul. 2020*

- Advisor: Prof. Chih-Jen Lin, GPA: 4.26/4.3

**B.S. in Computer Science Dept., National Taiwan University**

*Sep. 2013 - Jan. 2018*

- Minor in Mathematics
- GPA: 4.06/4.3 (major GPA: 4.17/4.3) with 4 presidential awards (top 5% award)

## Research Interests

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- AI systems, Cloud ML, Optimization for ML, and scalable/distributed ML algorithms
  - Currently building an intercloud broker system, SkyPilot, to bring them all together

## Publications

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- Z. Yang and **W.-L. Chiang**\* and S. Luan\* and G. Mittal and M. Luo and I. Stoica. “Balsa: Learning a Query Optimizer Without Expert Demonstrations,” **SIGMOD 2022**
  - Y.-S. Li\*, **W.-L. Chiang**\*, and C.-p. Lee. “Manifold Identification for Ultimately Communication Efficient Distributed Optimization,” **ICML 2020**
  - **W.-L. Chiang**, X. Liu, S. Si, Y. Li, S. Bengio, and C.-J. Hsieh. “Cluster-GCN: An Efficient Algorithm for Training Deep and Large Graph Convolutional Networks,” **KDD 2019**
  - C.-Y. Hsia, **W.-L. Chiang**, and C.-J. Lin. “Preconditioned Conjugate Gradient Methods in Truncated Newton Frameworks for Large-scale Linear Classification,” **ACML 2018 (Best Paper Award)**
  - **W.-L. Chiang**, Y.-S. Li, C.-p. Lee, and C.-J. Lin. “Limited-memory Common-directions Method for Distributed L1-regularized Linear Classification,” **SIAM SDM 2018**
  - **W.-L. Chiang**, M.-C. Lee, and C.-J. Lin. “Parallel Dual Coordinate Descent Method for Large-scale Linear Classification in Multi-core Environments,” **KDD 2016**
  - M.-C. Lee, **W.-L. Chiang**, and C.-J. Lin. “Fast Matrix-vector Multiplications for Large-scale Logistic Regression on Shared-memory Systems,” **ICDM 2015**

## Research Projects

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**SkyPilot**

*Fall 2021 - present*

- An intercloud broker system for easily and cost-effectively deploying ML workloads on any cloud
- GitHub link: <https://github.com/skypilot-org/skypilot>

**Graph learning on Ray**

*Spring 2021 - present*

- Distributed training of graph neural networks for billion-scale graphs

**ML for query optimization**

*Spring 2021 - present*

- Balsa: a learned query optimizer without expert demonstrations
- Github link: <https://github.com/balsa-project/balsa>

**Cluster-GCN**

*Spring 2019 - present*

- Main developer of an efficient algorithm for training large and deep GCN
- Link: [https://github.com/google-research/google-research/tree/master/cluster\\_gcn](https://github.com/google-research/google-research/tree/master/cluster_gcn)

**Distributed LIBLINEAR***Summer 2017 - present*

- One of the main developers of a distributed extension of a widely-used linear classification package
- The study is based on L1 regularized linear classification which published at SDM 2018
- Link: <https://www.csie.ntu.edu.tw/~cjlin/libsvmtools/distributed-liblinear/>

**Multi-core LIBLINEAR***Spring 2015 - present*

- One of the main developers of a multi-core extension of a widely-used linear classification package
- The study on primal solvers is published at ICDM 2015; the one on dual solvers is published at KDD 2016
- Link: <https://www.csie.ntu.edu.tw/~cjlin/libsvmtools/multicore-liblinear/>

**Work Experience****Intern@Amazon Product Graph**, Seattle*May 2021 - Aug 2021*

- Proposed contrastive pre-training techniques for semi-structured data
- Few-shot learning with BERT on information extraction benchmark (SWDE)
- Mentors: Colin Lockard

**Intern@Google Research**, Mountain View*Dec 2018 - Mar 2019*

- Developed efficient algorithms for training large (million-scale) and deep GCN models
- Achieved state-of-the-art performance on several public datasets (PPI, reddit)
- Mentors: Prof. Cho-Jui Hsieh and Si Si

**Intern@Alibaba Group**, Hangzhou*July 2017 - Sept 2017*

- Developed distributed ML algorithms on Alibaba's parameter server (KunPeng)
- Reduced the training time (5% ~ 30%) of billion-scale models behind Ads and recommendation systems
- Mentors: Prof. Chih-Jen Lin and Wei Chu

**Research Intern@Microsoft**, Redmond*July 2016 - October 2016*

- Developing large-scale ML algorithms on Microsoft's distributed platform (REEF)
- Implemented Newton's method for solving billion-scale Ads CTR problems
- Mentors: Prof. Chih-Jen Lin and Sathya Keerthi

**Awards and Honors**

- **Best Paper Award, ACML** *2018*
- **Bachelor Thesis Award, First Prize, National Taiwan University** *2017*
- **Innovative Undergraduate Research Award, Ministry of Science and Technology** *2017*
- **Undergraduate Research Award, First Prize, NTU CSIE** *2016*

**Teaching Experience****Lecturer & Organizer@Project Sprout**, National Taiwan University*Spring 2014 - Spring 2017*

- C++/Python programming courses for senior high students in Taiwan
- 1000+ students have participated over years and the program is sponsored by Microsoft, Trend Micro, CyberLink and SYSTEX
- Facebook page: <https://www.facebook.com/ntucsiesprout>

**Teaching Assistant**, National Taiwan University*Fall 2015*

- *Introduction to the Theory of Computation* instructed by Prof. Chih-Jen Lin